



**Draft for Review**

November \_\_, 2015

Reference No. 038443-62

Mr. Timothy D. Hoffman  
Dinsmore & Shohl  
Fifth Third Center  
1 S. Main St. Suite 1300  
Dayton, Ohio  
45402

Mr. Brian Clark – Tenant  
NexGen Vending  
2003 Dryden Road  
Moraine, Ohio  
45439

Dear Messrs. Hoffman and Clark:

**Re: Summary of Vapor Intrusion Sampling Results  
NexGen Vending – Building 14  
South Dayton Dump and Landfill Site, Moraine, Ohio**

GHD (formerly Conestoga-Rovers & Associates [CRA]) prepared this letter to inform you of the results of the vapor intrusion (VI) sampling completed at your property from 2012 to 2015. Sub-slab (SS, space under your building floor) and indoor air (IA) samples were collected in 2012 as part of the VI investigation at the South Dayton Dump and Landfill (SDDL) Site, and from 2013 to 2015 to evaluate the performance of the installed sub-slab depressurization system (SSDS). The sample locations within NexGen Vending (designated as Building 14) are presented on Figure 1. GHD is conducting this work on behalf of the companies that have responded to United States Environmental Protection Agency (USEPA) requests for Site investigation and VI studies (Respondents). Oversight is being performed by USEPA.

VI is the migration of volatile chemicals from the subsurface into overlying buildings. VI is a potential concern at any building, existing or planned, located near soil, groundwater, or soil vapor containing solvent- or petroleum-related compounds that may volatilize or chemicals that are combustible.

GHD collected SS and IA samples to determine if solvent- or petroleum-based compounds are present in soil vapor beneath the foundation and in IA within the buildings at levels which exceed SS and/or IA screening levels, as established by the Ohio Department of Health (ODH) in 2012.

The ODH has recommended the screening levels for SS and IA samples. The 2012 screening levels represent concentrations of substances that are unlikely to cause harmful (adverse) health effects in exposed people, based on residential exposure. Detections in IA below these levels are not a health concern. The SS screening levels are calculated based on an attenuation factor (AF) to account for

the mixing and ventilation that occurs when vapors enter the indoor air space<sup>1</sup>. In November 2015, USEPA proposed to supplement the ODH screening levels for the industrial buildings with SSDSs at the Site with SS values based on an AF of 33, to reflect current VI guidance for residential buildings (screening levels calculated based on an AF of 33 are referred to as ODH SS screening levels (AF=33)). GHD collected and submitted samples to TestAmerica Inc. GHD received and validated the results of the laboratory analysis. A copy of the validated analytical results compared to the ODH screening levels (AF=10) can be found in Table 1.

Compounds detected at concentrations greater than the ODH SS screening levels (AF=10;AF=33) and ODH IA screening levels from SS and IA samples are presented below. All of the samples are reported in units of parts per billion by volume (ppbv). Figure 1 presents the history of exceedances at Building 14 sample locations.

**Table A Summary of Building 14 Sampling Results for NexGen Vending**

| Location           | Sample Type | Sampling Date | Parameter             | Detected Concentration (ppbv) | ODH IA Screening Level (AF=10) (ppbv) | ODH SS Screening Levels (AF = 10; AF=33) (ppbv) |
|--------------------|-------------|---------------|-----------------------|-------------------------------|---------------------------------------|---|
| <i>Building 14</i> |             |               |                       |                               |                                       |   |
| SS-14-A            | Sub-slab    | 01/06/2012    | 1,1-Dichloroethane    | 500 / 320                     | Not Applicable                        | 160; 528  |
|                    |             | 03/28/2012    |                       | 970                           |                                       |   |
|                    |             | 08/02/2012    |                       | 4,100                         |                                       |   |
|                    |             | 01/16/2014    |                       | 270 J / 160 J                 |                                       |   |
|                    |             | 06/03/2014    |                       | 720 / 650                     |                                       |   |
|                    |             | 02/19/2015    |                       | 173                           |                                       |   |
| SS-14-A            | Sub-Slab    | 08/02/2012    | Benzene               | 50                            | Not Applicable                        | 20; 66  |
| SS-14-A            | Sub-Slab    | 08/02/2012    | Trichloroethene (TCE) | 36 J                          | Not Applicable                        | 20; 66  |
|                    |             | 06/03/2014    |                       | 27 / 30                       |                                       |   |
| SS-14-A            | Sub-Slab    | 01/06/2012    | Vinyl chloride        | 84 / 70                       | Not Applicable                        | 20; 66  |
|                    |             | 03/28/201     |                       | 820 J                         |                                       |   |

<sup>1</sup> The 2012 ODH Screening levels were calculated based on an AF of 10, reflective of 2002 USEPA guidance. USEPA revised and issued final VI guidance in 2015 which utilizes an AF of 33 for residential buildings; see "OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Source to Indoor Air (USEPA, June 2015) (Final Vapor Intrusion Guidance)".

|         |            |            |         |       |                |                |
|---------|------------|------------|---------|-------|----------------|----------------|
|         |            | 2          |         |       |                |                |
|         |            | 08/02/2012 |         | 5,500 |                |                |
| SS-14-C | Sub-Slab   | 03/27/2012 | TCE     | 27    | Not Applicable | 20; 66         |
| IA-14-A | Indoor Air | 08/02/2012 | Benzene | 2.4   | 2              | Not Applicable |
|         |            | 01/16/2014 |         | 3.2   |                |                |
| IA-14-B | Indoor Air | 08/02/2012 | Benzene | 2.1   | 2              | Not Applicable |
|         |            | 01/16/2014 |         | 2.1   |                |                |

#### Notes:

Value / Value – Result / Duplicate Result

J – Estimated concentration

GHD completed measurements at each sub-slab soil vapor probe location to check if the SSDS is depressurizing the building sub-slab. A vacuum reading of negative 0.004 inches of water column ("w.c.") indicates that the SSDS is successfully depressurizing the building sub-slab. The latest vacuum readings are presented in Table B below.

**Table B Summary of Building 14 NexGen Vending Vacuum Readings**

| Location | Vacuum (" w.c. ) | Target Vacuum (" w.c. ) |
|----------|------------------|-------------------------|
| SS-14-A  | -0.490           | -0.004                  |
| SS-14-B  | -0.0456          |                         |
| SS-14-C  | -0.01274         |                         |
| SS-14-E  | -0.00136         |                         |

#### What do these results mean?

The 2012 TCE SS sample and IA results were greater than the ODH screening levels. These results showed that at the time of each sampling event in 2012, VI was occurring in Building 14.

In 2012, benzene was the only parameter detected in Building 14 indoor air at concentrations greater than the ODH IA screening levels. Benzene was detected at a concentration greater than the ODH IA screening level only once following the installation of the SSDS in December 2013. There have been no benzene IA exceedances since January 2014.

In 2012, 1,1-Dichloroethane, benzene, TCE, and vinyl chloride were detected in Building 14 SS soil vapor at concentrations greater than the ODH screening levels. Following the installation of the SSDS, SS exceedances were present in sample results collected from only one SS probe (SS-14-A). The 2015 SS concentrations at SS-14-A were less than the ODH SS screening levels (AF=33).

**Conclusion**

The 2015 sampling results show that IA concentrations are less than the 2012 ODH IA screening levels, and SS concentrations are less than the ODH SS screening levels (AF=33).

The vacuum at SS-14-E indicates that the existing SSDS is not successfully depressurizing the sub-slab in the southeast corner of Building 14.

**Recommendation**

As presented on Figure 1, U.S. EPA and GHD propose to install one additional extraction point (EP-3) in Building 14, in the vicinity of SS-14-E, in order to improve the vacuum in this portion of the building.

GHD will complete quarterly checks of the SSDS and collect SS and IA samples annually to ensure acceptable system operation conditions.

If you have questions related to the sampling or on-going site investigation, please do not hesitate to contact the undersigned.

GHD Services Inc.

Julian Hayward, P. Eng.

VC/cb/1

Encl.

cc: Steve Renninger - U.S. EPA Removal Program Manager  
Leslie Patterson – U.S. EPA Remedial Program Manager  
Jenny Davison – U.S. EPA Remedial Program Manager  
Maddie Adams – Ohio EPA, Site Coordinator  
Julian Hayward - GHD